LT Series Level Transmitter

User Manual

YUANBEN
源本

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LT Series Level Transmitter User's Manual

1. Description

Shanghai Yuanben has developed a stainless-steel version Level Transmitter, its continuous output signal is 0~5Vdc or 4~20mA, and the sensor combines the proven reliability of magnetic reed switching with resistors net worked to provide a variable output proportional to the float position.

The transmitter features two-wire current or voltage output, four-wire for low level alarm option, and can be fitted externally 2" NPT connection or an flange. The operating temperature range is from -30℃ to 125℃. The working pressure is from 1.5 to 2.0 Mpa. The LCD display can be selected.

2. Model and Simplex

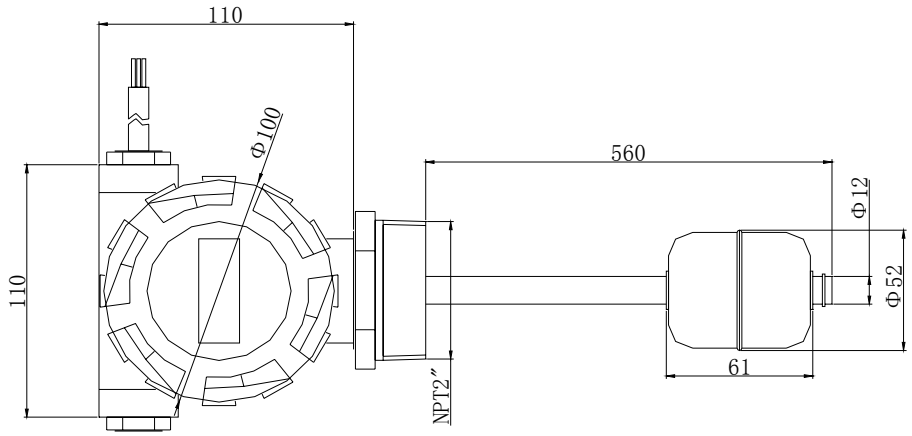
LT Level Transmitter						
Model	**Simplex**					**Feature**
LT level Transmitter	□	□	□	□	□	
	500					Stem length: 500mm
	1000					Stem length: 1000mm
		Ⅰ				LCD Display
		Ⅱ				No LCD display
			A			0-5 Vdc Output
			B			4-20mA Output
				300		Cable length
				M8		Connector: M8 or M12
					P1	Float Material: PP, P1; PA, P2; PVDF; P3
					S1	SUS304,S1; SUS316L, S2;
					N	NBR

3. Specification

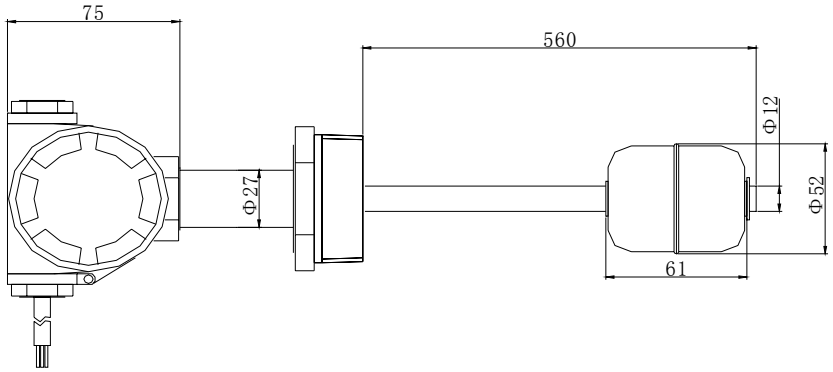
No.	Characteristic	Parameter	Note
1	Working voltage	12Vdc	
2	Output signal	4~20mA	
3	Accuracy	±15mm	
4	Input resistance	Less 350 Ohm	
5	Length of lead wire	1000/500mm	
6	Working temperature range	-30~125℃	
7	Working pressure (max)	2.0 Mpa (SUS304)	
8	Special Gravity of liquid	0.65g/cm^3	
9	Protective Class	IP65	
10	Display	LCD display selected	
11	Mounting threads	2"NPT or Flange	
12	Approval	CE	

4. Dimension

4.1 Aluminium housing (With LCD display)



4.2. Aluminium housing (no LCD display)



5. Mounting

Note: Be sure to read and understand all of the Installation Instruction before beginning the procedure!

5.1 Unpacking

Carefully remove the contents of the shipping carton and check each item against the packing list before destroying any packing materials. If there is any shortage or damage, report to the factory at postmaster@yuanben.cn

5.2 Mounting Conditions

• When installing probes, you do not bend rigid probes, otherwise permanent damage may result. Longer probes need to be supported at both ends while being handled.

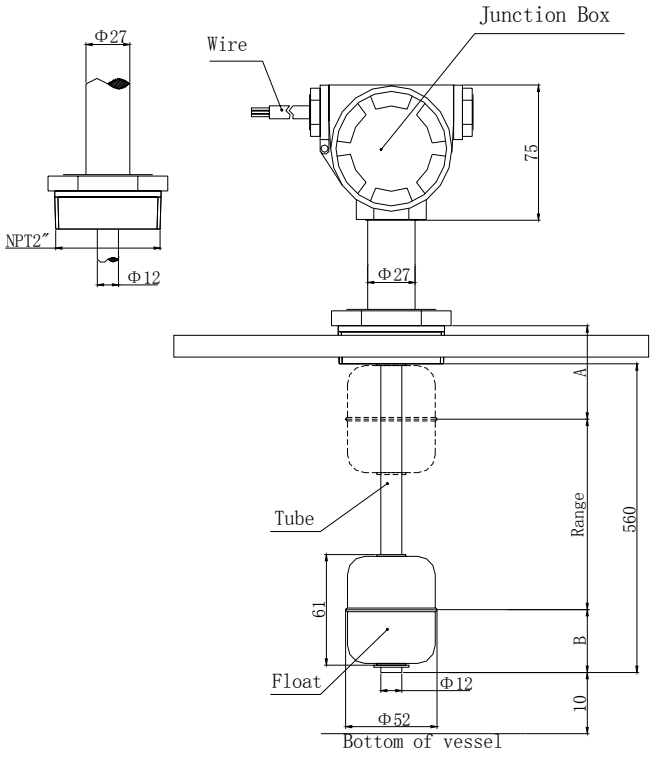
Probes are sealed at the factory and have electronic switches inside. Do not attempt to open the probe or weld the tube.

•LT series level system is designed for industrial applications, but should be mounted in a position as free as possible from vibration, corrosive atmospheres, or any possibility of mechanical damage.

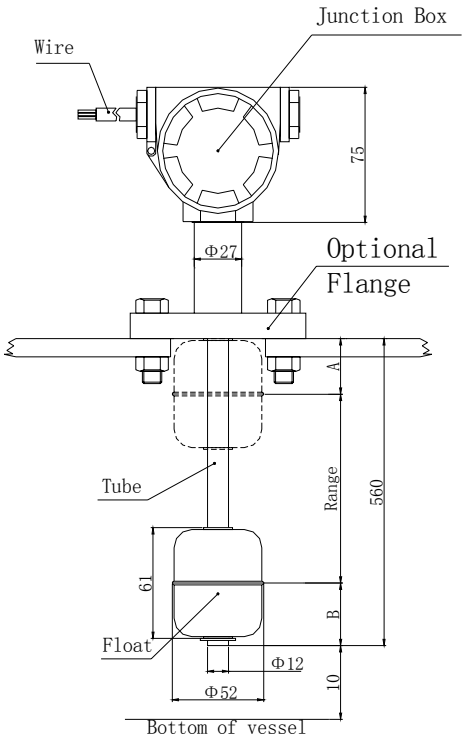
• Mount the probe perpendicular to gravity.

• Float should have free movement along probe. Float dimensions are dia.52*dia.52

• Float Retention Clip should be in place at base of probe.



Blind Range A=50 B=30



Blind Range A=30 B=30

5.3 Mounting Considerations

Mounting considerations may vary (Flanges, Compression Fitting, etc.) depending on the application. For underground tanks, the probe is generally mounted in the riser, resting on the bottom of the tank. Spacers are used to hold the sensor in the riser and a cable is suspended from the tank cap.

While most underground tanks are horizontal and fairly standard in design, over-ground tanks vary considerably. The requirements for mounting these probes are fairly simple. Since the sensor requires a float to provide level position, there is a minimum size required for insertion of the float into the tank. It is recommended that a minimum of 2" diameter be used for the most reliable system. The size and material of the float being used will have a slight impact on the overall accuracy of the measuring system. In general, the larger the float is the easier it is to provide a high accuracy measurement.

5.4 Stainless Steel Probe Mounting

5.4.1 Sizing of Stainless Steel Probe

Insertion Length is: Actual length from mounting point to bottom of tank. Overall length of probe is: Insertion Length plus 2 inches (51mm) for Flange mounted probe, and Insertion Length plus 3 inches (76mm) for Compression Fitting mounted probe. The testing range is not the same as the length of probe.

The amount of testing Range in a tank will vary, depending on the mounting style.

Stainless Steel probes are available in lengths up to 12 feet (3.77m). Due to difficulty with shipping and installation on site, it is recommend 2 to 5 feet (0.6 to 1.5m) as maximum length for this style probe, if practical.

Most of the SS Probes are mounted with probe end resting on bottom of the tank (for non pressurized tanks) or about 1⁄2" (12.7mm) from bottom (for pressurized tanks) and held in position with compression fitting at top of tank.

Minimum process connection depends on the diameter of float, but it is suggested to use 2" NPT or larger.

If this compression fitting is used, fitting should be positioned below "crimp" in tube or a minimum of 4 inches (102mm)

from the top of probe. Hand tighten fitting in a non-pressurized tank. This will allow a slight movement of probe when tank expands or contracts. If tank is pressurized, fitting must be tightened.
If a flange is being used, a “D” style connector can be specified to thread probe directly into flange. This requires more accuracy in specifying overall length of probe, but eliminates need for compression fitting or adapter bushing. Contact factory if Welded Flange connection is required. But we wish you not to select the flange, it is too expensive to delivery.

5.4.2 Assembly of Stainless Steel Probe

1. Standard SS Float Kit should contain 2 inch 316 stainless steel float and retainer to hold float onto probe. There is an “E-Clip”.
2. Two people are recommended for assembly of probe, one to hold the probe and the other to assemble components.
3. Slide compression fitting if it is being used on probe.
4. Slide reducing bushing or flange on to probe.
5. Slide float onto probe. Magnet is located in the middle of the float, so orientation of float does not make any difference.

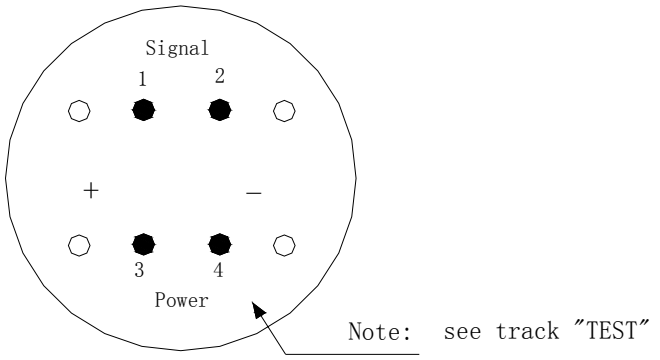
5.4.3 Insertion of Stainless Steel Probe

Do not allow float to drop suddenly since it can damage retainer at end of probe.

1. Insert bottom end of probe into tank.
2. Thread bushing into tank or flange. Bolt flange into position.
3. Thread compression fitting into bushing or flange.
4. Hand tight, to insure compression fitting is sealed, turn fitting 2” turns after hand tightening.
5. Make final check to see that all of bolts and screws are in proper position and probe is securely tightened.

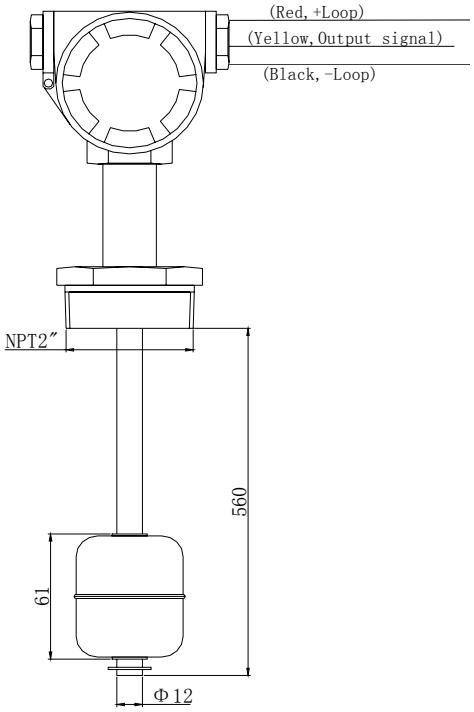
5.5 Electric circuit linking

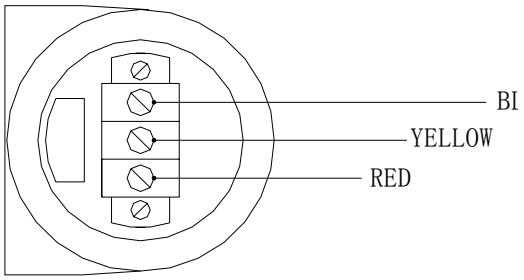
5.5.1 Electric terminal connect (with LCD display)



See the graphic of terminal contacting
3#~4# lead is power 12Vdc, 3# is positive, 4# is negative
1#~2# lead is signal output. (4~20mA)
Note: if the 3# is negative, the transmitter cannot normal working.

5.5. 2 Cable Connect (3 wire no LCD display)





WIRING COLORS	SIGNAL
Red color	(+) Power Positive
Black color	(-) Power Negative
Yellow color	Output Signal

6.0 Troubleshooting

6.1 Symptom Chart

Symptom	Troubleshooting Tip
No Signal Received at controller	• Check wiring connection to Power
	• Check that power Pole is correct, red wire connect power positive, and Black wire connect power negative.
Output is Under 4mA, no variable with the float moving (water Level changing)	• Be sure float retention clip is in place at base of probe
	• Be sure float is in place and not stuck.
	• Check signal wire (in probe) that is connect with Negative
Output current over 39mA, no variable with the float moving (water Level changing)	• Check float for free movement along probe
	• Be sure probe is mounted perpendicular with gravity
	• Check signal wire (in probe) that is break, or the negative wire is break
The output current is not changing (as 16mA), when water level is rising to middle point	Check the output resistance whether that is less 350 Ohm.
Output appears to be going down, yet tank is filling	• Check configuration of 4mA & 20mA points
Output appears to be going up, yet tank is emptying	• Check configuration of 4mA & 20mA points

6.2 Internal Diagnostics

6.2.1 During Normal Operation:

Power pole is opposite, Wire Break, or float outside active range output is Indicated nothing

6.2.2 Lost Float" Diagnostic:

When Float gets stuck beyond active ranges, or end cap falls off and float slips away from probe, then outputs will indicate as shown no variable with the float moving (water Level changing)

6.3 Manual test

Place float magnet near top of probe or place the float magnet near the bottom of probe, the output indicate from 4mA to 20 Ma

6.4 Factory Assistance

Manual book can answer any questions about The LT Series Level Transmitter.
If you require assistance and attempts to locate the problem have failed:
Contact your local representative, or our company
Please provide the following information:

- Instrument Model Number
- Sensing Element Model Number and Length
- Original Purchase Order Number
- Material being measured
- Temperature
- Pressure
- Agitation
- Brief description of the problem
- Checkout procedures that have failed

7. Order information

Specify the following when ordering Model, suffix numbering, the instruments is shipped with the settings, so It is necessary, such as measuring range of probe, the length and dia. of probe.

7.1 float ball type for special gravity of liquid.

Specify the number of wire as well. (Example; pressure of system, temperature system)

7.2. Calibration range and unit

Calibration range can be specified within the measurement range.